

CLAIMS

1. An electrodeless discharge lamp comprising:

an airtight container bulb made of a transparent material and enclosing a discharge gas; and

a coil assembly body (hereafter referred to as coupler), contained in a hollow portion (hereafter referred to as cavity) provided in the bulb, for generating a high frequency electromagnetic field by conducting a high frequency current in a coil to excite the discharge gas so as to emit light,

wherein the coupler comprises:

a pipe-shaped cylinder formed of a thermal conductor for heat release;

a skeleton-shaped bobbin mounted on an outer surface of the cylinder along an axial direction of the cylinder;

a core made of a soft magnetic material provided at an opening formed by the skeleton of the bobbin and being in substantial surface contact with the cylinder; and

a coil wound around a surface of the skeleton-shaped bobbin and the core.

2. The electrodeless discharge lamp according to claim 1, wherein the skeleton-shaped bobbin of the coupler is made of resin, wherein when referring to a part of the bobbin positioned back in the cavity as a bobbin upper part, and referring to its part positioned at an opening portion of the cavity as a bobbin lower part, the bobbin comprises: a substantially doughnut-shaped upper collar; at least two pillar portions extending in a

direction from this upper collar to the bobbin lower part; and a cylindrical lower collar supporting these pillar portions and extending to be the bobbin lower part, in which the upper collar, the pillar portions and the lower collar support the core and the coil.

3. The electrodeless discharge lamp according to claim 2, wherein at least one of the collars of the bobbin protrudes further than a thickness of the core, or protrudes further than a maximum diameter of the coil, in a radial direction of the coupler.

4. The electrodeless discharge lamp according to claim 2, wherein the pillar portions and the lower collar of the bobbin are partially provided with a groove formed to contain a lead line of the coil.

5. The electrodeless discharge lamp according to claim 4, wherein in order to fix the lead line of the coil contained in the groove formed in the bobbin, the groove has a rib for fixation formed on an inner wall thereof.

6. The electrodeless discharge lamp according to claim 4, wherein the groove formed in the bobbin is partially provided with a notch formed to fix a beginning of winding of the coil, and to insulate the coil from the core.

7. The electrodeless discharge lamp according to claim 4, wherein an insulating tape is wrapped around periphery of the core, and the coil is wound thereon, while a conical or angular prismatic rib for bending and fixing the lead line is formed on a pillar portion of the bobbin adjacent to the groove at the beginning of the winding of the coil.

8. The electrodeless discharge lamp according to claim 4, wherein a step is formed on a pillar portion of the bobbin between length dimensions of walls forming the groove of the pillar portion in order to bend and contain,

in the groove, the lead line at an end of the winding of the coil.

9. The electrodeless discharge lamp according to claim 2, wherein the bulb has an air exhausting pipe in the cavity, and

a projection having a slope, which serves as a guide when mounting the coupler in the cavity of the bulb, is formed at the substantially doughnut-shaped upper collar of the bobbin.

10. The electrodeless discharge lamp according to claim 2, wherein notch windows are formed on a cylindrical surface of the lower collar of the bobbin, while convex portions are formed at corresponding positions of the cylinder, in which the windows and the convex portions are formed in pairs, and their respective dimensions are different.

11. The electrodeless discharge lamp according to claim 2, wherein: the lower collar of the bobbin has a terminal box provided on a cylindrical outer periphery thereof;

terminals are inserted into and from both sides of the terminal box in a circumferential direction so as to electrically connect the lead line of the coil to a lamp cable; and

an insertion direction of the lamp cable is opposite to an insertion direction of the cable.

12. The electrodeless discharge lamp according to claim 2, wherein the bobbin is provided with a base receiver which passes therethrough and is mounted thereon, and

this base receiver has a hole formed on an upper surface thereof for rotational fit to a base of the bulb.

13. The electrodeless discharge lamp according to claim 1, wherein

the core is formed of a couple pieces of ferrite core divided left and right, and has flat portions on the rear thereof.

14. The electrodeless discharge lamp according to claim 1, wherein the core protrudes upward further than the cylinder at an upper part of the coupler.